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**COMMUNICATION FROM THE COMMISSION TO THE EUROPEAN
PARLIAMENT, THE COUNCIL, THE EUROPEAN ECONOMIC AND SOCIAL
COMMITTEE AND THE COMMITTEE OF THE REGIONS**

EUROPE ON THE MOVE

**An agenda for a socially fair transition towards clean, competitive and connected
mobility for all**

{SWD(2017) 177 final}

1. TOWARDS SUSTAINABLE MOBILITY

Transport has a long and proud history in Europe. Europe has been instrumental in bringing new technologies and innovation to the world. European aircraft, trains and vehicles are synonymous with world class quality.

Our ambition is that Europe continues to play this role in the future and to be a leader in clean, competitive and connected mobility. To put it simply, we want to make sure that the best low-emission, connected and automated mobility solutions, equipment and vehicles will be developed, offered and manufactured in Europe and that we have in place the most modern infrastructure to support them.

This ambition is needed because **the mobility sector plays a vital role in the EU economy and society**. It is a major employer in itself, and an indispensable driver for the global competitiveness of the wider economy. The free movement of people and goods within the EU's internal market, and the economic, social and cultural benefits of a "Europe without frontiers" rely on easy mobility and an accessible transport network within a Single European Transport Area. A modern mobility system is also a prerequisite for a successful transition to a low-carbon economy in Europe and for reversing the rise in greenhouse gas emissions and air pollution from transport in spite of increased mobility needs.

Profound changes in how we enjoy mobility are under way. Traditional mobility is being transformed through shared mobility services and easier shifts between transport modes. Technology and societal needs continue to drive change. Digitalisation, automation and alternative energy sources are challenging traditional features and creating new opportunities linked with resource efficiency and the collaborative and circular economy. But such changes can also be disruptive. While they create new jobs, they can also make others obsolete. They call for new skills, good working conditions and need anticipation, adaptation and investment.

The EU must be a leader in shaping this change at global level. This means moving from the fragmented transport networks of today towards the integrated and sustainable mobility of tomorrow. The Commission is setting out an agenda to make **clean, competitive and connected mobility** a reality for all. Our action is geared to strengthen the competitiveness of the European mobility sector with a view to boosting jobs, growth and investment while addressing the pressing social dimension of mobility and ensuring high levels of safety and security for the travelling public. It will make a critical contribution towards the Commission's ambition to deliver a Europe that protects, empowers and defends and to meet the EU's energy and climate targets for 2030. It will help to improve public health and the quality of life of all citizens in the EU. This requires a **comprehensive and integrated approach** with all actors working together at the different levels – EU institutions, Member States, cities and other local authorities, industry, social partners, and all stakeholders. The European Parliament's motion for a resolution on road transport in the European Union confirms that we come with proposals at the right time and share the same vision.¹

We are not starting from zero. The EU has already put key building blocks in place. The path has been set out to create a Single European Transport Area, identifying the barriers to safe, efficient and affordable cross-border mobility services by land, sea and air across the

¹ <http://www.europarl.europa.eu/sides/getDoc.do?type=MOTION&reference=B8-2017-0290&format=XML&language=EN>

entire Union. Many steps are already being taken in the aviation and rail sectors.² In addition, the EU's strategic trans-European transport infrastructure projects and EU research programmes, notably Horizon 2020, are supporting infrastructure deployment and transport innovation.

This Communication focuses on the key contribution that must be made by **road transport**. It is accompanied by a series of proposals targeting this sector, whose aims include supporting the rollout of infrastructure for road charging, alternative fuels and connectivity, better information for consumers, a stronger internal market and improved working conditions for the road haulage sector, as well as steps to lay the ground for cooperative, connected and automated mobility.³ These will be complemented over the next 12 months by other proposals, including on post-2020 emissions standards for cars and vans as well as for heavy-duty vehicles.

The significance of mobility in general and road transport in particular is reflected in the wide range of other EU policy frameworks, which have a decisive influence on them. The success of the Juncker Commission priorities of the **Energy Union**, the **Digital Single Market** and the **Jobs, Growth and Investment agenda** all contribute to transport and mobility. The **Energy Union Strategy** of February 2015⁴ identified the transition to an energy efficient, decarbonised transport sector as one of its key areas of action, and the "Clean Energy for all Europeans" package of November 2016⁵ included action to accelerate the deployment of low-carbon transport fuels and to support electro-mobility. The measures which were already outlined in the **Strategy for Low-Emission Mobility** adopted in July 2016 are now being implemented.⁶ Investment in infrastructure under the **Investment Plan for Europe**⁷ provides a powerful stimulus for Europe's clean, competitive and connected mobility of the future. As set out in the **European Pillar of Social Rights**⁸, building a fairer Europe and strengthening its social dimension is a key priority for this Commission. These objectives must also apply in the mobility sector and support a fair and well-functioning labour market.

² COM(2015) 598

³ See also in the mid-term review of the Digital Single Market Strategy COM(2017) 228.

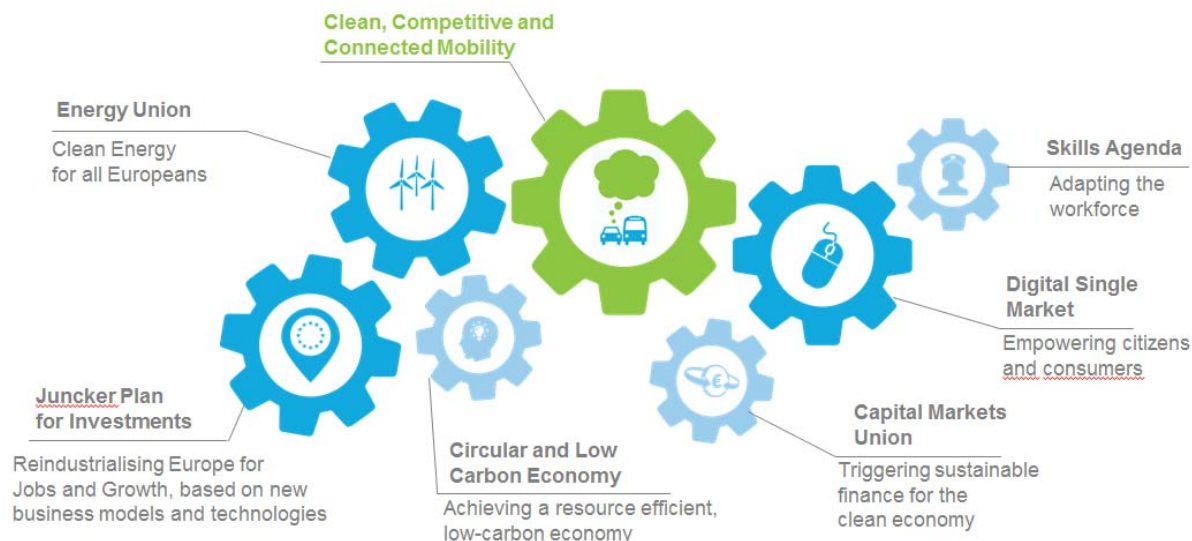
⁴ COM(2015) 80

⁵ Under the proposed revisions of the Renewable Energy Directive (COM/2016/0767) and the Energy Performance of Buildings Directive (COM/2016/0765).

⁶ COM(2016) 501

⁷ https://ec.europa.eu/commission/priorities/jobs-growth-and-investment/investment-plan_en

⁸ COM(2017) 250



2. KEY TRENDS AND CHALLENGES

Achieving sustainability as demand continues to grow

Transport activity across Europe is expected to continue growing. From 2010 to 2050, it is estimated that passenger transport will grow by about 42 per cent. Freight transport is expected to grow by 60 per cent.⁹ This makes achieving a mobility system that is sustainable all the more challenging.

Mobility is now the largest economic sector in the world. In the EU, the transportation and storage sector employs more than 11 million people, accounting for more than 5 per cent of total employment¹⁰ and almost 5 per cent of EU Gross Domestic Product¹¹. It accounts for about 20 per cent of EU exports to the EU's main trade partners. Road transport is the main transport mode used in the EU, accounting for almost half of the total freight transport activity (almost three-quarters on land) and dominating citizens' personal transportation.¹² It is estimated that EU road transport companies directly employ around 5 million people working in around 915,000 companies, mostly small and medium-sized.¹³

Congestion from road transport causes huge inefficiencies estimated at 1 per cent of EU Gross Domestic Product (EUR 100 billion) and rising.¹⁴ Road transport is also a major contributor to air pollution, which poses a serious threat to public health. The consequences are borne by transport users and especially by residents of Europe's cities, which often fall short of the

⁹ Source: Impact Assessment accompanying the Proposal for a Directive amending Directive 1999/62/EC on the charging of heavy goods vehicles for the use of certain infrastructures. All data references can be found in the SWD (2017) 177 accompanying this Communication.

¹⁰ Eurostat Labour Force Survey, 2016 data, for NACE H: "Transportation and Storage".

¹¹ EUROSTAT National Accounts, 2014 data, for NACE H: "Transportation and Storage".

¹² EU Transport in Figures 2016: https://ec.europa.eu/transport/facts-fundings/statistics/pocketbook-2016_en

¹³ Estimates based on Eurostat Structural Business Statistics, 2014 data, for NACE H.

¹⁴ Study on Urban Mobility – Assessing and improving accessibility of urban areas European Commission, 2017.

EU's air quality standards.¹⁵ The results are serious; nearly three times as many people suffer a premature death in the EU due to transport-related pollution¹⁶ than die in road accidents¹⁷, and millions suffer from life-long respiratory and cardiovascular diseases.

In addition, transport is a major contributor to Europe's greenhouse gas emissions, second only to energy. Road transport alone is responsible for almost a fifth of EU emissions. The mobility sector is therefore of particular importance in the EU's efforts to maintain the momentum towards the goal of a low carbon economy. Whilst transport activity grows, greenhouse gas emissions must fall; this is essential to meet the EU's energy and climate objectives for 2030. Moreover, the Commission has put forward the ambition for the EU to reduce greenhouse gas emissions from transport by at least 60 per cent by 2050.¹⁸ Results so far have been weak and efforts to reverse this trajectory need to accelerate. This is most obvious in road transport, where a move to zero-emission vehicles is needed.

Sustainable mobility also means dealing better with scarce resources. The circular economy will become more important in terms of re-using scarce materials and limiting raw material costs. For example, battery recycling could become the basis of new business models in the European automotive industry.

Changing consumer behaviour and demand patterns

Citizens' mobility demands are growing and their attitude to mobility is changing. Mobility is increasingly regarded as a service and consumers want better quality, convenience, flexibility and affordability. They want to be able to shift seamlessly between different transport modes and enjoy easy access to travel information. For younger generations in particular, renting and sharing mobility services are increasingly popular and owning a private vehicle is becoming less of an aspiration.

EU citizens spend an average of almost 10 hours per week using transport, travel an average distance of 34.7 km per day, and spend 13 per cent of their total consumption on transport-related items.¹⁹

The daily experience of traffic jams, the Paris climate agreement, the crisis over diesel car emissions, public debate on the effects of emissions, and policy measures such as vehicle restriction zones to discourage car use in urban areas, have all contributed to making consumers far more aware of the impact of private transport on air quality, climate change and health. People today want mobility options, which at the same time enhance mobility and contribute to fighting climate change and air pollution. However, an ageing and increasingly urbanised population presents Europe with mobility challenges not only in cities, but also for social inclusion and the connectivity of rural areas.

¹⁵ EU legislation on ambient air quality and cleaner air for Europe (Directive 2008/50/EC) sets air quality limits that cannot be exceeded anywhere in the EU, and obliges Member States to limit the exposure of citizens to harmful air pollutants. Today, these limits are being exceeded in 23 out of 28 EU Member States and in over 130 cities across Europe.

¹⁶ <https://www.eea.europa.eu/publications/air-quality-in-europe-2016>

¹⁷ http://ec.europa.eu/transport/facts-fundings/scoreboard/compare/people/road-fatalities_en

¹⁸ COM(2016) 501

¹⁹ Boston Consulting Group/IPSOS, Observatoire Européen des Mobilités Première édition Les attentes des Européens en matière de mobilité, April 2017: <http://www.ipsos.fr/decrypter-societe/2017-04-26-lundi-au-vendredi-europeens-passent-en-moyenne-9h35-se-deplacer>

Employment and competitiveness

The European mobility sector must remain among the best in the world. Given its importance for jobs and growth and the increasing global competition, the EU transport sector should be at the forefront of embracing innovation and the deployment of new technologies. This process of change must take full account of the working conditions and social challenges in the sector.

Decarbonisation, the use of low-emission technologies, such as electric powertrains for vehicles, and the deployment of cooperative, connected and highly automated mobility solutions are among the most pressing challenges and important opportunities for our future mobility; the same is true for the emergence of new mobility concepts such as car-sharing and new solutions for optimising logistics.

The European automotive sector will experience structural changes, which may considerably reshape its value chain, investment priorities, and technological choices with implications also for its global competitive position. This will affect different actors in the value chain, from raw materials providers, suppliers and vehicle manufacturers, to dealers and aftermarket services, as well as all those providing mobility services.

The EU's automotive sector provides jobs for 8 million people and accounts for 4 per cent of the EU's Gross Value Added, bringing a trade surplus of EUR 120 billion.²⁰ The EU is among the world's biggest producers of motor vehicles and the sector is the largest private investor in research and development, underlining its global technological leadership. Even though final assembly is increasingly taking place close to markets outside the EU, the high value ends of the value chains, for example research and development, design or marketing, remain largely in Europe.

A change in skills

To fuel technological innovation and reap its benefits, the workforce of the EU's mobility sector needs the right set of skills; this is already a huge challenge for industry today. Clean, connected and automated vehicles have an impact on labour intensity in manufacturing and require new skills, for example in the assembly of electric motors or manufacture of batteries, computing or sensing equipment, and while the growth in engineering jobs is expected to continue, processes increasingly demand sophisticated IT skills. On the other hand, automated driving may have a significant impact on the workforce and require reskilling in the medium to long-term, for example in the case of professions such as lorry drivers. This trend needs to be anticipated and accompanied by a stronger social dialogue as well as support mechanisms to help people make the best of the new opportunities.

Road safety

While great progress has been achieved in the past decades making the EU the world's safest road transport region, the high number of fatalities and serious injuries still cause great human

²⁰ European Commission, Directorate General for Internal Market, Industry, Entrepreneurship and SMEs, *Automotive Industry*, available at: https://ec.europa.eu/growth/sectors/automotive_en

suffering and unacceptable economic costs, estimated at EUR 100 billion annually. In 2016, 25,500 people lost their lives on EU roads and a further 135,000 people were seriously injured.²¹

The digital mobility revolution

The EU's mobility sector needs to take advantage of the opportunities created by digital technologies. Connectivity and social media are transforming traditional concepts of mobility. New business models are emerging and giving rise to innovative mobility services including new on-line platforms for freight operations, car-pooling, car or bicycle sharing services, or smartphone applications offering real-time analytics and data on traffic conditions.²²

Vehicles themselves are also being transformed by digital technologies. They are becoming increasingly smart as new on-board connected and cooperative services and increased levels of automation become available. Major investment is now being devoted to developing driverless vehicles. Automated vehicles will need to rely on secure data exchanges between vehicles and between vehicles and road infrastructure, which will in turn require sufficient and robust network capacity for millions of vehicles to interact at the same time.

Infrastructure investment needs

Since the global economic crisis, the EU has been suffering from low levels of investment in infrastructure, such as transport, energy, and digital. This has held back the modernisation of the EU's mobility system. Collective and coordinated efforts at European level, recently reinforced by the Investment Plan for Europe²³, need to reverse this downward trend.

The International Monetary Fund estimates that 1 per cent of increase in spending on conventional infrastructure leads to 1.5 percentage points of increase in Gross Domestic Product.²⁴

Fully automated driving will require new telecommunication and satellite infrastructure and services for positioning and communication between vehicles. Fifth generation mobile (5G) communication²⁵ and Galileo services offer an important opportunity to service such needs. Autonomous driving and clean vehicles will call for integrated infrastructure planning and investment to equip roads with the necessary telecommunications and charging infrastructure, for example for electric cars, as well as to provide high quality road data, for example for high definition digital maps, and fully interoperable on-board equipment.

It is estimated that EUR 740 billion are needed to complete the core network corridors of the Trans-European Transport network²⁶ by 2030– creating a genuine Single European Transport

²¹ http://ec.europa.eu/transport/facts-fundings/scoreboard/compare/people/road-fatalities_en

²² COM(2016) 356, COM(2016) 288.

²³ https://ec.europa.eu/commission/priorities/jobs-growth-and-investment/investment-plan_en

²⁴ IMF World Economic Outlook, October 2014.

²⁵ COM(2016) 588

²⁶ Work plans of the European Coordinators for the TEN-T core network corridor: https://ec.europa.eu/transport/themes/infrastructure/ten-t-guidelines/corridors_en

Area, supporting the EU Single Market and decarbonisation, and making full use of digitalisation. Total investment for EU transport infrastructure (combining the Trans-European-Transport (TEN-T) Networks comprehensive network and urban transport) are estimated at EUR 130 billion per year, broadly consistent with historical levels of about 1 per cent of Gross Domestic Product.²⁷ Further significant investments will be needed to address the current infrastructure maintenance shortfalls present in most EU Member States. Mobilising these huge transport investments will require a major combined effort from both the private and public sectors.

3. MOBILITY IN EUROPE IN 2025

Europe's ambition must be to make rapid progress towards having a clean, competitive and connected mobility system integrating all means of transport in place by 2025. It must span the entire Union and connect it to its neighbours and to the world. It must allow everyone to travel comfortably within and between cities and rural areas, while staying connected. It must also be based on an industry that is a world leader in manufacturing and service provision.

This ambition requires an **integrated approach** at EU, national, regional and local levels covering many different policy areas. At EU level, it requires a targeted set of common **rules and standards** with a wide range of **support measures**.²⁸ These include infrastructure investments, research and innovation projects, cross-border trials for interoperable deployment, and platforms for cooperation between stakeholders.

All these mutually-reinforcing measures have been combined into a single future-oriented mobility agenda. The agenda focuses on areas where the EU can make a real difference in delivering **clean, competitive and connected mobility for all**. It focuses particularly on road transport's essential contribution to this vision for mobility in Europe in 2025.

3.1 Accelerating the shift to clean and sustainable mobility

The EU must accelerate Europe's transition towards zero-emission mobility. This is why the Union needs a comprehensive regulatory framework comprising action on clean technologies through improved emission standards, and on deployment of low-carbon fuels²⁹, while at the same time ensuring high levels of safety and security. Moreover, early deployment of smart road charging, better consumer information and support for actions by national and local authorities will deliver huge benefits in terms of competitiveness, protection of the environment and public health.

²⁷ Source: OECD – ITF (2016)

²⁸ A more detailed presentation is contained in the SWD(2017) 177 accompanying this Communication.

²⁹ COM(2016) 767

Promoting sustainable mobility through improved emissions standards

In response to the recent crisis surrounding car emissions and the major public concern it has generated, the Commission has taken swift and comprehensive action to ensure effective control and transparency for consumers. A proposal for a new robust **EU framework for type approval**³⁰ has been put forward and is among a series of EU measures designed to restore consumer confidence in the automotive industry and rebuild trust in the regulatory system. We now need swift agreement by the European Parliament and Council to put this ambitious and much-needed legislation in place. In addition, new test procedures have been introduced to test emissions from cars in real driving conditions as well as in the laboratory, and will apply to new types of vehicles from September 2017.

Global innovation and competition are accelerating and the automotive sector faces a fundamental transformation process. Europe must define a path, which ensures that Europe's automotive value chain will also have in the future the leading position worldwide it enjoys today.

EU-wide carbon dioxide emissions standards are a strong driver for innovation and efficiency and will contribute to strengthening competitiveness and pave the way for zero and low-emission vehicles in a technology-neutral way. The Commission has started work to **revise the post-2020/2021 carbon dioxide standards for cars and vans**. Options under review include specific targets for low and/or zero-emission vehicles. EU standards for **heavy duty vehicles** are also under consideration by the Commission. These proposals are envisaged respectively for the end of this year and the first half of 2018. They will be based on modernised test procedures closer to real-world emissions.

Before developing the new carbon dioxide limits for heavy duty vehicle emissions, the Commission is putting forward a robust certification procedure for the determination of carbon dioxide emissions and fuel consumption, together with a system for the monitoring and reporting of such certified data. These measures will increase transparency for consumers and also facilitate differentiation in road user charging.

Emissions from heavy duty vehicles, such as lorries, buses and coaches currently represent around a quarter of road transport carbon dioxide emissions and are forecast to increase by up to 10 per cent between 2010 and 2030, yet they are not subject to fuel efficiency standards in the EU unlike in other regions of the world.³¹

The Commission is also examining how to quickly make best use of existing provisions in the **legislation on weights and dimensions** of heavy duty vehicles to improve fuel efficiency and carbon dioxide emissions performance in relation to aerodynamics.³²

Fostering the transition towards a low-carbon economy is a priority for the EU's cohesion policy. This includes an estimated EUR 39 billion for supporting the move towards an energy-efficient, decarbonised transport sector, which in turn includes EUR 12 billion devoted to low-carbon, multi-modal, sustainable urban mobility.

Empowering the consumer to make informed choices

³⁰ COM(2016) 031

³¹ Source: EU Reference Scenario 2016: Energy, Transport and GHG Emissions – Trends to 2050.

³² Directive (EU) 2015/719

It is important to provide consumers with transparent and more accurate information on vehicles' emissions performance. The new framework for emissions standards will provide tools for measures such as improved consumer information in the areas covered by **car labelling**³³ and allow Member States to better tailor their fiscal measures, and local authorities to use them in schemes to promote clean mobility. For this purpose, this year's LIFE call for proposals³⁴ also supports projects that empower consumers to benefit from real-world fuel consumption savings and make informed purchase decisions for cars with low-polluting emissions.

Already today, many **cities** in Europe have decided to tackle the challenges posed by **climate change, congestion and air pollution** in a concerted manner. They are committed to investment in clean public transport and are also promoting active and sustainable modes of transport, supported by **multimodal travel information services**, which offer users a range of mobility options, including bicycle and car-sharing schemes. Some cities are introducing or considering vehicle access restrictions in an effort to reduce the high levels of air pollution from road transport. The Commission is monitoring these initiatives in close dialogue with cities and Member States³⁵, in particular to ensure that all drivers are able to access the relevant **information**. Additional measures could include **guidance for cities on vehicles' access restrictions to urban areas**, but effective implementation of EU specifications for Intelligent Transport Services³⁶ will especially ensure that public authorities make accurate real-time travel information of this kind available to users.

Smart road charging

Revenues collected from road users can make an important contribution to financing infrastructure, and adjustments to reflect usage and emissions can help to accelerate innovation, for example in clean technologies. A growing number of EU Member States are putting in place various forms of **road charging**.

The Commission considers that road charging based on distance (as opposed to time) better reflects actual usage, emissions and pollution and is therefore **proposing adjustments to the regulatory framework for road charging** to address this.³⁷ These will broaden the scope to include coaches and light vehicles including cars, support the shift to applying the "user and polluter pays" principles for all vehicles, and modernise road charging methods. The inclusion of the external cost of air pollution in road charges, differentiated charging according to emissions performance and more favourable conditions for zero-emission vehicles will encourage and reward those who invest in cleaner vehicles.

Congestion in urban areas can also be tackled through smart charging, and the Commission is proposing to update the rules to enable the introduction of congestion charges applicable to all vehicles. In the next stage vignettes should be gradually phased out in favour of use-based systems, beginning with heavy goods vehicles by 2023.

³³ C(2017) 3525

³⁴ <http://ec.europa.eu/environment/life/funding/life2017/index.htm>

³⁵ The Commission will launch the European Clean Air Forum in November 2017, with a special focus on cities and on concrete examples of successful development and deployment of clean and efficient mobility systems.

³⁶ Directive 2010/40/EU

³⁷ COM(2017) 275, COM(2017) 276

Public procurement as a market-driver for clean transport

To better promote the use of **public procurement** to incentivise the creation of markets for innovative and low-emitting products, the Commission is planning to revise EU legislation on clean vehicles towards the end of 2017.³⁸ Since a significant part of public procurement is undertaken by municipal and local authorities, there is particular potential for public transport vehicles, such as buses, to use low-emission alternatives. EU co-financing is available, for example from the European Regional Development Fund.³⁹

Cleaner and smarter mobility in cities

With the objective of contributing to the development of sustainable and efficient urban mobility, an urban mobility partnership between the EU, national governments, local authorities and other stakeholders was launched by the Commission in January 2017 in the framework of the **Urban Agenda for the EU**.⁴⁰ Its focus will be on public transport, soft mobility and accessibility (for the needs of groups like the disabled, the elderly and young children), on efficient transport with good local and regional connectivity, and on how urban mobility can be harnessed to ensure high air quality standards across cities in Europe.⁴¹ The objective is to prepare an Action Plan to be implemented as of 2018, taking advantage of the experience gathered through numerous CIVITAS projects and the sustainable urban mobility plans developed so far.⁴²

3.2 Ensuring a fair and competitive internal market for road transport

The EU must ensure a socially fair and competitive internal market for road transport services given the importance of the sector for the Union's economy and society. EU industry must build on its strong competitiveness in transport-related manufacturing and services. Taking into account the social dimension is essential.

Creating a level playing field in road haulage

The Commission is therefore revising the **EU rules on access to the road haulage market and on hired vehicles**⁴³ with the aim of ensuring an adequate level playing field among transport operators, reducing the number of unnecessary empty runs, improving the clarity of the rules to tackle market fragmentation, and better enforcement. The elimination of unnecessary and burdensome administrative requirements (e.g. prior notification of the number of cabotage⁴⁴ provisions) and enforcement practices will further reduce costs and improve market conditions.

³⁸ Directive 2009/33/EC

³⁹ See SWD(2017) 177 for further details.

⁴⁰ <https://ec.europa.eu/futurium/en/node/1829>

⁴¹ In particular the Urban Mobility and Air Quality Partnerships will provide concrete solutions building on best practices across Europe.

⁴² <http://civitas.eu/> See also SWD(2017) 177 for further details.

⁴³ COM(2017) 281, COM(2017) 282

⁴⁴ Usually defined as transport of goods or passengers between two places in the same country by a transport operator from another country.

It is estimated that the Commission's proposal would allow savings for businesses of around EUR 3 to 5 billion for the EU for 2020-2035.⁴⁵

The Commission is also reviewing the EU rules on **buses** and **coaches** with a view to ensuring a level playing field for all operators and better travel options for consumers.⁴⁶

Enhancing the social framework and employment conditions

Furthermore, the Commission is adopting a number of measures aimed at improving the application of **social legislation in road transport** in order to ensure the effective functioning of the internal market and to improve the social conditions of drivers working in international transport which are currently unsatisfactory.⁴⁷ Measures on market access must go hand-in-hand with action to ensure legal certainty and more effective enforcement of social rules. These measures will address the problematic practice of "letterbox companies", complex and non-transparent business models, prevent illegal cabotage and fight against illicit employment practices. The objective is to provide a high level of social protection for all workers in the transport industry across the Union, while preventing fragmentation and removing administrative burdens for companies. By ensuring efficient administrative procedures (e.g. accepting the use of electronic documents, and carrying out checks using tachograph data) these measures will also bring better guarantees for a level playing field, a more seamless service across the EU, and reduced costs and running times.

As is envisaged in the legislation, the Commission is proposing more clarity on the application of EU rules on the **posting of workers**⁴⁸ to the road transport sector. The Commission proposes to confirm that all cabotage operations must be subject to local rules on remunerations. This will also address the proportionate and effective application of minimum wage laws to international services and introduce an improved enforcement system. It is also proposing measures ensuring that drivers can return home on a very regular basis and are always provided with adequate accommodation for their weekly rests. The Commission will consult social partners on proposals for more clarity and flexibility in the calculation of average working time.⁴⁹ The result will be both more social fairness and improved long-term competitiveness for the European road haulage industry.

Better compliance and enforcement through smart digital technologies

On-board digital devices such as the **digital tachograph** used by road hauliers can protect the working conditions of employees, enable less burdensome means to control compliance with EU law, , as well as play a role in applying differentiated road charging schemes, thereby facilitating the development of new mobility services. The Commission is proposing measures to promote such digital solutions both for interoperable tolling (**European Electronic Tolling System**⁵⁰) and for controlling the application of social rules and for simplifying administrative formalities for operators (accelerated deployment of **digital**

⁴⁵ SWD(2017) 194 and SW(2017) 195

⁴⁶ Regulation (EC) 1073/2009

⁴⁷ COM(2017) 278

⁴⁸ Directive 96/71/EC (proposed revision currently under discussion in the European Parliament and Council).

⁴⁹ C(2017) 3815

⁵⁰ COM(2017) 280

tachographs⁵¹, more systematic use of e-documents, exchange of information between national enforcement authorities through enhanced interconnected or common databases, leading toward single window solutions). Measures will also ensure that these technologies are properly adapted to take full advantage of new intelligent transport systems.

Supporting a change in skills

The Commission is supporting sectoral partnerships specifically in the automotive sector through its **Blueprint for Sectoral Cooperation on Skills** under the **New Skills Agenda for Europe**.⁵² This promotes cooperation between employers, trade unions, education and training institutions to identify and address skills mismatches and develop skills strategies and update curricula and training modules. To support the work of such sectoral partnerships, the Commission has launched a call for proposals under its Erasmus+ programme in January 2017.

Road safety

Actions are required by all actors to reduce the suffering and economic costs from road deaths and injuries, which are still unacceptably high. The regulatory environment, technology and infrastructure all play a role and the new interaction between infrastructure and vehicles can also improve road safety, and contribute to the ambition of "Vision Zero by 2050".

Connected and automated driving⁵³ and Advanced Driver Assistance Systems can increase safety by compensating for human error and distraction, which are at the origin of many road accidents. By the end of 2017, the Commission will complete a **review of the general safety requirements for cars, lorries and buses** defined under the type-approval framework with a view to upgrading them to reflect the latest technological advances.⁵⁴

The Commission is also reviewing EU legislation **on road infrastructure and tunnels safety** applicable along the Trans-European Networks-Transport network to assess whether the safety bar should be raised.⁵⁵

3.3 Harnessing the benefits of digitisation, automation, and intelligent mobility services

The EU must harness the opportunities of digitisation and automation to build an efficient and interconnected mobility system providing users with safe, attractive, intelligent, seamless and increasingly automated mobility solutions. Digitisation helps to make transport and logistics operations more efficient by improving traffic flows and optimising the use of infrastructure, reducing administrative burdens for operators and allowing a better combination of public and private transport. It also contributes to the decarbonisation of transport by facilitating shifts to cleaner transport modes and promoting higher passenger vehicle occupancy rates.

⁵¹ COM(2016) 381

⁵² COM(2016) 381

⁵³ See SWD(2017) 177 for further details.

⁵⁴ Regulation (EC) 661/2009. At the international level, adoption of the UN Global Technical Regulations on Safety of Electric Vehicles, foreseen for November 2017 will promote a uniform regulatory framework in countries like China, Japan, Korea and the US.

⁵⁵ Directive 2004/54/EC

Cooperative, connected and automated mobility

The Commission is supporting the **coordinated rollout of mass market partially automated and connected vehicles by 2020** by taking forward a wide range of policy, regulatory, public support actions and stakeholder platforms in cooperation with Member States and industry. A coordinated approach to spectrum management and the rollout of **5G technologies** will be crucial enablers for these new services.⁵⁶

The challenges are still great for higher levels of automation as well as for the next generations of communication technologies. Large-scale testing on the open road is essential to make progress on the technology, foster cooperation amongst the different actors and facilitate public acceptance. Such tests are already possible in several Member States and are supported by dedicated calls in Horizon 2020. In the Letter of Intent on connected and automated driving signed on 23 March 2017, 27 EU Member States, Norway and Switzerland committed to step up cooperation on cross-border sections, itineraries or corridors on which to conduct research, tests and large-scale demonstrations on road safety, data access, quality and liability.

As concluded by the **GEAR 2030 high level group**⁵⁷ in its first recommendations for automated vehicles expected by 2020⁵⁸, the placing on the EU market of these vehicles is already possible under the current EU type-approval framework through an ad-hoc vehicle safety assessment. The final report of GEAR 2030 (to be published in November 2017) will include long-term recommendations on higher levels of automation for vehicles expected by 2030. In parallel, important work is being undertaken at the international level by the United Nations Economic Commission for Europe with participation of EU Member States and the Commission.

L3PILOT⁵⁹ is an important demonstration pilot project under Horizon 2020, which will start in summer 2017. It will focus on large-scale piloting of a wide range of automated driving functions for passenger cars.

As part of the data economy work stream under the **Digital Single Market Strategy**, the Commission is addressing key issues including liability, and data sharing and ownership rules, which are very relevant for the evolution of automated driving.⁶⁰

Growth in the uptake of increasingly cooperative, connected and automated vehicles means that cooperative intelligent transport systems are needed so that vehicles can communicate with each other directly, with traffic signals and roadside infrastructure, as well as with other transport users. The Commission has already presented a strategy aimed at delivering the coordinated and harmonised deployment of **Cooperative Intelligent Transport Systems** in Europe by 2019.⁶¹ The proposed measures are designed to avoid fragmentation of the internal

⁵⁶ COM(2016) 588

⁵⁷ GEAR 2030 is a Commission High Level Group tasked to develop recommendations on the future regulatory framework of the automotive sector. [Commission Decision C\(2015\) 6943](#) of 19 October 2015.

⁵⁸ <https://circabc.europa.eu/w/browse/6b12fa47-6d95-498d-b68d-d29581b32179>

⁵⁹ See SWD(2017) 177 for further details.

⁶⁰ COM(2017) 228. See also SWD(2017) 177 for further details.

⁶¹ COM(2016) 766

market and to address the most critical issues, such as cybersecurity and data protection, which are essential for operational effectiveness and public acceptance. In addition, several implementing measures will be adopted by the Commission in 2017 to ensure interoperability and continuity of services.

Within the **C-ROADS platform**⁶², Member States cooperate in the common deployment of Cooperative Intelligent Transport Systems. The platform will ensure interoperability through the definition of joint technical specifications and cross-border testing.

Trans-European Cooperative Intelligent Transport Systems and cross-border Connected and Automated Driving trials: The Commission will strengthen its support for large-scale cross-border projects and trials for connected and automated driving and the deployment of cooperative intelligent transport systems by 2019. This will build on the C-ROADS platform and help to implement actions agreed under the Letter of Intent, mentioned above. These actions benefit from combined funding from the Connected Europe Facility and Horizon 2020.⁶³

Enhancing the efficiency of transport networks

Connectivity and the accessibility of real-time digital information is revolutionising logistics operations and the way journeys are planned. It allows freight or passengers to combine transport modes so that they can follow the most efficient, affordable and environmentally-friendly route.

The Commission is taking action that will contribute to enhancing the sustainability and efficiency of the mobility network by creating incentives and platforms, which allow the respective strengths and the capacity of each transport mode to be better exploited. It will **revise legislation on combined transport**⁶⁴ in autumn 2017 to promote cleaner freight transport. Reducing restrictions such as authorisation procedures, and offering financial support through fiscal incentives, can stimulate a shift to minimising the road component through combined transport operations.

The Commission has set up the **Digital Transport and Logistics Forum**⁶⁵ focusing on the digitalisation and acceptance of transport documents and the establishment of management systems. The work involves all logistics chain actors and the need to agree on technical solutions and rules for data accessibility, exchange, ownership, quality, protection, as well as financing and governance.

Using connected and automated technologies for tracking and planning of goods and making goods hubs more efficient (achieving higher load factors for heavy goods vehicles) could significantly contribute to fuel and emission reductions.⁶⁶

The Commission is also adopting legislation on **multimodal travel information**, which will establish the specifications necessary to make EU-wide multimodal travel information services accurate and available to users across borders on the entire transport network.⁶⁷

⁶² <https://www.c-roads.eu/platform.html> See also SWD(2017) 177 for further details.

⁶³ SWD(2017) 177

⁶⁴ Council Directive 92/106

⁶⁵ C(2015)2259

⁶⁶ [STRIA Roadmap 7 - CAT.docx - European Commission - Europa.eu](#)

3.4. Investing in a modern mobility infrastructure

All of the measures presented will contribute to delivering a clean, competitive and connected mobility system for EU businesses and citizens in 2025, but realising this vision will also very much depend on significant private and public investments and the deployment of modern and efficient infrastructure.

Boosting investment in infrastructure for the future

Alongside the physical transport network and an alternative fuel infrastructure, digital infrastructures – well-interconnected and interoperable across borders – will be needed for the mobility system of the future. The deployment of these interconnected and cross-border infrastructures and harmonised and interoperable digital services (5G coverage, data networks, cooperative intelligent transport systems) will require significant investment.

The **Investment Plan for Europe** triggered EUR 194 billion in new investment in 28 Member States in less than two years; 9 per cent of the investments cover specifically the transport sector, but it is also driving investment in related sectors such as energy, digital and research and innovation, including in low-emission vehicles.⁶⁸

The **Connecting Europe Facility for Transport**⁶⁹, with about EUR 24 billion of funds available over the period 2014-2020, finances large and complex projects along the main Core Network Corridors of the Trans-European Transport network. So far, the programme has co-funded 452 projects for a total amount of EUR 19.4 billion, representing a total investment (when combined with other public or private funds) of EUR 37.7 billion. The Connecting Europe Facility "blending call" launched in February 2017 seeks to leverage EUR 1 billion of grants using a combination of different financial instruments with financing from public financial institutions, the private sector and, for the first time, the European Fund for Strategic Investments⁷⁰

It will be important to further **maximise synergies between transport, energy and telecommunications infrastructure** by exploring the potential for combining funds from the corresponding Trans-European Network programmes under the **Connecting Europe Facility**. This could contribute to cross-cutting objectives such as the decarbonisation of transport and energy supply, diversification and smart grids. A first "synergy call" for proposals combining the different sectors was published at the end of 2016 and brought together the transport and energy components of the Connecting Europe Facility with a total availability of funds amounting to EUR 40 million.

For the 2014-2020 period, EUR 70 billion have been programmed in the **Cohesion Fund** and **European Regional Development Fund** to support co-financing for investments in the field of mobility and transport.⁷¹ Especially in the less-developed Member States and regions,

⁶⁷ https://ec.europa.eu/info/law/better-regulation/initiatives/ares-2017-1550125_en

⁶⁸ https://ec.europa.eu/commission/priorities/jobs-growth-and-investment/investment-plan_en. For concrete examples see SWD(2017) 177 for further details.

⁶⁹ See SWD(2017) 177 for further details.

⁷⁰ See SWD(2017) 177 for further details.

⁷¹ http://ec.europa.eu/regional_policy/sources/how/strategic-report/esif_annual_summary_2016_en.pdf

cohesion policy supports transport infrastructure investments (mostly in rail and road) aimed at closing missing links and removing bottlenecks in the system. In all Member States cohesion policy helps to make transport smarter, cleaner and safer by supporting investments in areas such as sustainable urban mobility, road safety, multi-modal transport, Intelligent Transport Systems, clean fuels and vehicles, as well as cycling and walking.

Cities are an area with specific mobility investment needs. Building on experiences within the Investment Plan for Europe, the Commission, together with the European Investment Bank, is looking into ways to establish a specific framework for regulatory and financial support for cities. The aim is to enhance cooperation between cities, which would enable projects to be aggregated and scaled up so that they are more bankable and attractive for private investors.⁷²

Deploying innovative mobility solutions will also depend on further **investments in research and innovation**. Europe has the biggest multinational research programme in place, Horizon 2020. Support for future mobility will feature prominently in the upcoming calls under the Horizon 2020⁷³ programme and its public private partnerships, the European Green Vehicles Initiative⁷⁴ and the Joint Undertaking on Fuel Cells and Hydrogen.⁷⁵ More coordination of transport research and innovation efforts at national and European levels between Member States and stakeholders is needed.⁷⁶ This should also help to steer implementation and monitor progress in conjunction with existing mechanisms⁷⁷.

Accelerating alternative fuel infrastructure deployment

Market development of alternative fuel-powered vehicles largely depends on the wide availability of **alternative fuel infrastructure**⁷⁸, such as electric charging and maintenance facilities. Journeys across Europe in electric vehicles should be straightforward; this means electric charging must be as easy as filling the tank.⁷⁹

Between now and 2020 over 1200 alternative fuelling points, notably electro-mobility charging points, will have received grant support under the **Connecting Europe Facility**.⁸⁰ An estimated 6 million charging points (2.8 million pre-cabling and 3 million actual charging points) could be deployed in non-residential and residential buildings if the European Parliament and the Council were to rapidly adopt the Commission's proposal for a review of the Energy Performance of Buildings Directive, which is currently under negotiation.⁸¹

The deployment of a network of recharging points covering evenly the whole EU road network, together with, for example, the development of energy storage technologies and

⁷² One-Stop-Shop for Cities: <https://ec.europa.eu/info/eu-regional-and-urban-development/cities>

⁷³ See SWD(2017) 223 and SWD(2017) 177 for further details.

⁷⁴ <http://www.egvi.eu/>

⁷⁵ <http://www.fch.europa.eu/>

⁷⁶ See SWD(2017) 223

⁷⁷ Such as the Accelerating Clean Energy Innovation Initiative (COM(2016) 763 final) and the Integrated Strategic Energy Technology (SET) Plan (C(2015)6317)

⁷⁸ See SWD(2017)177 for further details.

⁷⁹ President Juncker's speech to the European Parliament, 26 November 2014.

⁸⁰ SWD(2017) 177

⁸¹ COM(2016) 765

devices, such as batteries, therefore represents another key enabling condition for zero-emission mobility.

As required under the **Alternative Fuels Infrastructure Directive**, Member States are developing their National Policy Frameworks setting out plans for the market development of alternative fuels vehicles and vessels and the deployment of relevant infrastructure. Member States which have not yet done so should submit their plans to the Commission as soon as possible. The Commission will publish its **assessment of those National Policy Frameworks in November 2017**. Building on this analysis, in particular the key aspect of the infrastructure roll-out on TEN-Transport corridors and in urban areas, the Commission will identify key issues and propose an action plan to address market failures justifying action at EU level, involving all relevant stakeholders.

An EU backbone charging infrastructure by 2025: the Commission will address the issue of investment financing in the context of an **Alternative Fuels Infrastructure Action Plan** to support the deployment of an EU backbone charging infrastructure, with the aim of providing full coverage of the Trans-European Networks-transport (TEN-T) corridors' core network with charging points by 2025.⁸²

Batteries as a key enabling technology

The Commission has been an early supporter of the development of batteries⁸³ as a key enabling technology for electric mobility and achieving Energy Union objectives. Initiatives have focused on contributing to improve batteries' performance (weight, size, range, durability, recyclability) and reduce battery costs through research and development. Research funds were targeted at different phases of the battery value chain from the battery materials (new or improved chemistries) through to the manufacturing of battery cells (new manufacturing technologies and machinery), battery packs and battery management systems (e.g. power electronics, connectivity to electric cars and to the energy grid). The Commission has also financed pre-market deployment and pilot production lines. However, although it is competitive in several segments of the value chain, the EU industry has not yet managed to develop a complete battery value chain. Battery cells are, for instance, still mostly imported from third countries as there is currently no mass production of battery cells in the EU. Given the growing strategic interest in batteries, the Commission plans to support industry-led initiatives for a full battery value chain in the EU that can be used for mobility and non-mobility applications (energy storage). Storage, including batteries, is one of the four priorities identified in the Communication on accelerating clean energy innovation.⁸⁴ To drive innovation and competitiveness, it is now necessary to accelerate the work that has been carried out so far with the involvement of Member States, industry and research centres. This should be based on needs, after careful consideration of market conditions, with the aim of defining and optimising possible intervention at EU and global levels.

⁸² See SWD (2017) 177 for further details.

⁸³ See SWD(2017) 177 for further details.

⁸⁴ COM(2016) 763

Scaling up battery cells and battery packs production: The Commission will step up its work with stakeholders (including the work under the Strategic Energy Technology Plan⁸⁵) to support an industry-led initiative and develop support measures for research, development and manufacturing of the next generation of battery cells and battery packs in the EU. The Commission will promote an integrated European battery eco-system in support of electric mobility and energy storage addressing the issue of scarce resources and battery recycling, which will help facilitate the emergence of new circular economy business models for the automotive industry.

4. CONCLUSIONS

Mobility is changing fast. At the beginning of an era of connected and automated vehicles, shared mobility, zero emissions, and easy shifts between transport modes, it is high time to prepare the future of mobility in Europe. Europe must move from the fragmented transport networks of today towards an integrated, modern and sustainable mobility system, which is connected to the energy and digital networks. Citizens and businesses must be offered safe, smart and seamless mobility solutions across Europe, and European infrastructure must be among the most advanced of the major global economies.

With this Communication, the Commission is putting forward an agenda for the future of mobility in the EU, for jobs, growth and a socially fair transition. The comprehensive package of regulatory and support measures can make clean, competitive and connected mobility for all a reality and allow Europe to be a global leader in shaping the future of mobility.

⁸⁵ C(2015) 6317